

UNIVERSITY OF NORTHERN COLORADO

announces the

**2008**  
**FRONTIERS OF SCIENCE INSTITUTE**

**APPLICATION DEADLINE:** Priority deadline is March 3/Extended deadline is April 14, 2008.

**WOULD YOU LIKE TO...**

- \*\*\* ...spend six weeks immersed in a learning-for-the-thrill-of-learning hands-on science curriculum of biology, environmental, engineering, earth, space, and physical sciences?
- \*\*\* ...receive an early introduction to college life and the interactions associated with community living?
- \*\*\* ...experience educational, personal, and social growth with peers who share similar interests?
- \*\*\* ...meet professionals in various scientific fields, become acquainted with science career opportunities, and assist with on-site field studies during field trips, industrial tours and seminars?
- \*\*\* ...conduct in-depth scientific research, learn to write a scientific paper, design a scientific poster and PowerPoint presentation with the guidance of a faculty mentor?
- \*\*\* ...earn at least a \$1000 scholarship to attend UNC?

**WHEN?** June 8- July 18, 2008

**WHERE?** University of Northern Colorado, Greeley, CO

**WHO CAN APPLY?** Students who are now in their sophomore or junior year (10<sup>th</sup> or 11<sup>th</sup> grade) in any public, private, or parochial school.

**STUDENT FEES:** An out-of-state scholar participation fee of \$3,000 is payable at time of scholarship acceptance (payment arrangements are available). The \$600 registration fee will be waived.

**QUALIFICATIONS:**

- A *strong interest in and aptitude for science*, as well as *broad interests in all areas of science* (science emphases vary each year and are determined by funding).
- A high level of self-discipline, dependability, and social maturity.
- Good physical health.
- A strong desire to challenge yourself and to engage in scientific investigations. Overnight field trips (with camping) are scheduled and **mandatory**.
- A strong work ethic and positive attitude.
- An interest in, and appreciation for differences in people, cultures, and ideas.

## HOW DO YOU APPLY?

1. Complete the application form that accompanies this announcement. (**Schools may duplicate the form, attain one from the website, or request additional copies from the FSI administrator at the address given below.**)
2. Request three letters of recommendation\* from each of these individuals:
  - a. A science teacher.
  - b. An English teacher.
  - c. Your counselor.

\*These letters should provide an evaluation of your ability for *self-directed* work, your ability to work in harmony with others, and your dependability as a member of a social group. **Three (3) letters are required to complete your application.**

3. Request an *official* transcript of your high-school grades, **including grades for the first semester of the current school year, and any available standardized test scores (PSAT or ACT).**
4. The above materials should be collected and sent **together in one envelope** to the address listed below. **For priority consideration, send in your application materials by March 3.** *All applications must be submitted by the extended deadline of April 14, 2008.* All applicants will be notified of their admission status no later than May 1, 2008.

**Lori K. Ball, Program Administrator  
Frontiers of Science Institute  
University of Northern Colorado  
Campus Box 123  
Greeley, CO 80639**

## GOALS OF THE FRONTIERS OF SCIENCE INSTITUTE (FSI)

FSI is designed for high-school students with a strong interest in and aptitude for science. FSI activities are designed to give students a better understanding of science frontiers the nature of scientific investigations. Participants will explore some problems and limitations in science and will be encouraged to continue with advanced scientific studies and the eventual pursuit of science careers.

It is intended that FSI should produce these results:

- Increase students' understanding of important basic scientific principles and advances at the cutting-edge of science.
- Help students recognize the interdependence and relationships among mathematics and areas such as biology, chemistry, physics, earth science, space science, computer science, and engineering.
- Help students understand how mathematics and written and oral communications are used to interpret and report scientific research.
- Increase students' understanding of methods of scientific research and provide opportunities to apply those methods in their own investigations.
- Highlight a personal academic pathway for students to realize their personal potential.
- Challenge students through opportunities for critical thinking based on personal experiences and enhance their understanding of the societal impact of scientific progress.

- Build students' understanding of and appreciation for natural resources and diverse environments relation to technology, science, and society.
- Cultivate students' passion for science and encourage pursuit of higher education and careers in science.

### FSI PROGRAM STRUCTURE

*FSI's instructional approach is different than that found in most high school classes.* The FSI curriculum consists of daily blocks (~105 min each) involving either single discipline instruction or interdisciplinary team teaching, depending on science topics considered. Class blocks focusing on engineering, environmental, biological, physical, earth, and space science usually involve combinations of discussions and laboratory activities emphasizing current topics within each of FSI's listed areas of study. On-campus studies are integrated with fieldwork and tours of industrial, government, or institutional research and production facilities along Colorado's Front Range.

Another component of FSI's varied approach to learning is a series of overnight field trips to the region's representative environmental zones, from South Dakota's Black Hills to prairies to Rocky Mountain tundra. A goal of FSI is to extend beyond the scope of high school science curricula and thus explore new, exciting frontiers of science.

FSI students are also engaged in **mentored research**, where they are matched with a mentor to complete a focused scientific research project. Most projects fall within the scope of their mentor's current work. Students learn to design experiments, collect and analyze data, and write a scientific research paper, thus building understanding of how mathematics and written and oral communications are used to interpret and report research. Students also prepare posters for display, design computer-based presentations and communicate their research findings and conclusions in formal talks to their peers, faculty, parents, and sponsors. Through this experience, FSI students learn skills that are valued in business and industry and build contacts for summer internships, as well as future work opportunities.

Every effort is made to expose FSI students to industrial researchers, science professors at UNC, and experts from nearby universities. These experts from industry and the scientific community conduct think-tank seminars in many science areas. Such interactions clarify current research projects, demonstrate how scientists think and work, and offer insight into science related careers. Seminars are offered on topics concerning the relationship of scientific knowledge and research to societal problems and philosophical questions.

**Each student will participate in all activities** (field and camping trips, seminars, industrial visits, scientific research, and all science classes). Therefore, FSI students should be open to explore all areas of science.

### UNC CAMPUS LIFE

Approximately thirty participants will live in an air-conditioned campus dormitory that is reserved for FSI's exclusive summer use. All students will be assigned FSI roommates, share meals in campus dining halls, and work in classrooms and laboratories within UNC's newly renovated and equipped Ross Hall located within a short walking distance. Resident advisors will plan varied evening and weekend activities according to student interests, e.g., recreation center swim and gym, bowling, movies, etc.

Casual attire is acceptable during the normal class day; however, formal business-like attire is required on all industrial visits and during FSI's Open House. More detailed information regarding what to bring will be mailed to each participant upon admittance into the program.

### EVALUATION

All students' efforts are evaluated at FSI's conclusion as instructors jointly prepare and write descriptive evaluations. These are retained on file and sent out at the request of each student. Many students ask that these evaluations serve as letters of recommendation for college admission or scholarships.

### **SCHOLARSHIPS TO SUPPORT FSI ATTENDANCE**

The Frontiers of Science Institute is sponsored by the University of Northern Colorado in collaboration with many corporations, foundations, and individuals who elect to promote science youth education. Each year, scholarships are available to support in-state student scholars that pay all room and board expenses, resident advisor expenses, and summer instructional costs for FSI's six-week program. *At this time, scholarship awards are limited to Colorado residents.*

At the time of acceptance, scholarship winners are required to pay a non-refundable \$600 registration fee. **This registration fee is waived for out-of-state scholar participants.**

### **SUPPLEMENTAL UNIVERSITY SCHOLARSHIP**

After completing FSI's six-week program, student participants are guaranteed a scholarship to attend UNC if this is their college of choice. Former FSI participants, deciding to attend UNC as incoming freshmen after their high school graduation are guaranteed at least a \$1000 UNC scholarship. Actual award amounts for FSI alumni who select UNC for their higher education will be determined at the time of UNC enrollment. Guidelines for each award vary slightly. Information about UNC scholarship programs can be found at [www.unco.edu/ofa](http://www.unco.edu/ofa).

### **ADDITIONAL INFORMATION**

FSI participants are expected to attend the *entire* six-week program. Students will not be admitted who plan to attend other short programs that interrupt their six-week commitment to FSI.

**All students submitting an application will be notified of their status no later than May 1, 2008.**

Students selected to attend the 2008 Frontiers of Science Institute are expected to arrive at UNC on **Sunday afternoon, June 8<sup>th</sup>**; the FSI program begins on Monday, June 9th. Arrival information and other details will be mailed upon formal admission to the Institute.

### **ADDRESS ANY QUESTIONS ABOUT FSI TO**

**Lori K. Ball, Program Administrator  
Frontiers of Science Institute (FSI)  
Daytime phone: 970.351.2976  
Evening phone: 970.396.9650  
E-Mail address: [lori.ball@unco.edu](mailto:lori.ball@unco.edu)  
Website: <http://mast.unco.edu/fsi> (under construction)**